SUBJECT INDEX

Acclimation,
and CTMax in hybrid bass, 271
and homeoviscous adaptation of brain membranes in *Channa*, 209
and sensitivity of goldfish heart to iodoacetate, 193
during development and 5′deiodinase activity in rats, 257
effect on scorpion hepatopancreas metabolism, 141
effect on tissue concentrations of IGF-1 and IGF-1 mRNA in pigs, 89
to cold and energy balance in pregnant rats, 235
to cold and fatty acid composition of BAT in rats, 251
to cold and skeletal muscle oxidative metabolism in pigs, 277
Acclimatization,
seasonal in the migratory hamster, role of photoperiod, 347
Aethopyga christinae, 71
Albedo,
and transmittance of short-wave radiation by bats wings, 317
Alcohol dehydrogenase,
inactivation of by heat, 297
Ambient temperature,
and body temperature and metabolic rate in the migratory hamster, 347
and spontaneous daily torpor in pouched mice, 25
and torpor in a hummingbird and sunbird, 71
effect of on three species of tropical oyster, 135
effect on blood chemistry in tilapia, 149
effect on heat production and body temperature in turkeys, 287
effect on oogenesis in *Helix*, 185
effect on organ growth and oxygen consumption of domestic fowl embryos, 339
effect on spermatogenesis in Turkish hamster, 175
modulation of menopausal hot flashes by, 43
Amphibia, 63, 121
Anemonia viridis, 217
Anticholinesterase,
effect on cardiovascular and thermoregulatory responses in man, 333
Arachnid, 97, 141
Arrhenius plot, 209

BAT,
5′deiodinase activity of and rearing temperature in rats, 257
non-thermal induced modification in composition of rats, 251
thermogenesis in rats during cold exposure, 83
Behavioural thermoregulation,
and development in turkeys, 287
effect of season and diet on in *Bufo marinus*, 63
in grasshoppers, 353
in two species of robber flies, 323
in two subspecies of *Neocicindela perhispida*, 55
Bird, 71, 287, 339, 357
Bleaching
in symbiotic anemone by hyperthermia and metals, 217
Blood chemistry,
effect of hibernation on in a snake, 107, 111
effect of low temperature on in tilapia, 149
relationship to blood flow and thermoregulation in heat in the rat, 155
Blood flow,
peripheral and plasma catecholamines and thermoregulation in heat in rat, 155
Body temperature,
and ambient temperature in pouched mice, 25
and anticholinesterase administration in man, 333
and exercise in rats, 155
and infra-red radiation in rabbits, 293
and habitat in two subspecies of *Neocicindela perhispida*, 55
and hot flashes in humans, 43
and water turnover rate in the Cape gerbil, 199
circadia rhythm of in normal and *tau* mutant hamsters, 129
in *Bufo marinus*, 63
in humming bird and sunbird, 71
in migratory hamsters, 347
in neonatal foal, 1
in turkeys, 287
measurements in cattle in response to stress, 115
subcutaneous in pigs during exercise, 125
Bos taurus, 115
Brain membranes,
homeoviscous adaptation in and acclimation in *Channa*, 209
Bufo marinus, 63

C3H 10T$\frac{1}{2}$ cells,
recovery of damage after heating, 19
Carassius auratus, 193
Catecholamines,
and peripheral blood flow during exercise in rats, 155
Cardiovascular responses,
to anticholinesterase administration in man, 333

Cell damage,
and hyperthermia in CHO cells, 305, 313
recovery following heating in C3H 10T½ cells, 19
Cell division,
abnormalities in and low temperature exposure, 175
Channa punctatus, 209
CHO cells, 161, 297, 305, 313
Circadian rhythm,
of body temperature in normal and *tau* mutant hamsters, 129
Coelenterate, 217
Cold exposure,
and energy balance in pregnant and non-pregnant rats, 235
effect on organ and body temperature in Wistar and Zucker *fa/fa* rats, 83
effect on spermatogenesis in Turkish hamster, 175
Cold tolerance,
and photoperiod in *Drosophila melanogaster*, 147
in *Hemideina*, 51
in two species of *Rana*, 121
of three species of tropical oyster, 135
Colouration,
and body temperature in subspecies of *Neocicindela perhispida*, 55
and the ecology of a desert spider, 97
Crassostrea belcheri, 135
Crassostrea iradelei, 135
Cricetulus migratorius, 347
Critical thermal maximum,
effect of starvation, oscillating temperatures and photoperiod on in hybrid bass, 271
Critical thermal minimum,
in neonatal foal, 1
Cyclic temperatures,
effect on heat production responses and feeding in pigs, 225
Cycloheximide,
induction of thermotolerance in CHO cells, 305, 313

Development,
changes in 5′deiodinase activity in BAT in rats during, 257
in domestic fowl and ambient temperature, 339
of autonomic and behavioural thermoregulation in turkeys, 287
Developmental thermoregulation,
in turkeys, 287
Drosophila melanogaster, 147

Embryonic organ growth,
effect of ambient temperature on in domestic fowl, 339
Electromyography,
used to measure shivering in hens, 357
Energy intake,
and acclimation, influences on tissue levels of IGF-1 and IGF-1 mRNA levels in pigs, 89
effect of cold acclimation on in pregnant and non-pregnant rats, 235
effect of cyclic and constant temperatures on feeding patterns in pigs, 225
Enzyme(s),
activities, acclimation effect on from scorpion hepatopancreas, 141
changes in 5′deiodinase in BAT during development in rats, 257
inactivation of alcohol dehydrogenase by heat, 297
inactivation of leucyl-tRNA synthetase by heat in CHO cells, 305, 313
role of polymerases α and β in recovery from radiation and heat damage, 19
Erythrocyte,
heat induced haemolysis of, 375, 381
Evaporative cooling,
in the Cape gerbil, 199
Evaporative water loss,
and thermoregulation in the Cape gerbil, 199
Exercise,
cardiovascular and thermoregulatory responses to with anticholinesterase administration, 333
effect on blood chemistry and flow in rats in the heat, 155
effect on fatty acid profiles of BAT in rats, 251
effect on subcutaneous temperatures in pigs, 125
effect on sweat gland recruitment in man, 267

Fatty acid composition,
effect of non-thermal influences on in BAT in rats, 251
Feeding,
effect of cycling and constant temperatures on in pigs, 225
lack of effect on behavioural thermoregulation in toads, 63
Fish, 149, 193, 209, 271
Fluctuating temperature,
and CTMax in hybrid bass, 271
Freezing,
tolerance in *Hemideina*, 51
tolerance in *Rana sylvatica* and *R. pipiens*, 121, 263

Gallus domesticus, 339, 357
Gerbillus allenbyi, 81
Gerbillus pyramidum, 81
Growth,
effect of cycling temperatures on in pigs, 225

organ, differential effect of temperature on in domestic fowl embryos, 339

Halothane sensitivity,
and subcutaneous temperatures in pigs, 125
Heart,
effect of iodacetate and lactate on in acclimated goldfish, 193
Heat,
induced protein aggregation, 297
Heat death,
temperatures in three species of tropical oyster, 135
Heat exposure,
and aerial exposure and survival of three species of tropical oyster, 135
during exercise and thermoregulation in rats, 155
Heat production,
and ambient temperature and age in turkeys, 287
and seasonal acclimatization in migratory hamsters, 347
by Wistar and Zucker *fa/fa* rats, 83
effect on responses to constant warm and cycling temperature, 225
in bantam hens, 357
Heat shock protein,
induction by heat but not rhTNF-α in L929 cells, 241
induction of by Herpes simplex virus, 11, 169
production and thermotolerance in normal and malignant rat brain cells, 33
production in *Anemone* in response to heat and metals, 217
relocation of during continuous heating in CHO cells, 161
Heat stress,
during exercise and anticholinesterase administration in man, 333
during exercise in rats, 155
Heat tolerance,
and HSP70 and HSP28 relocation during heating, 161
and HSP production in MD canine kidney cells, 169
comparison with TNF cytotoxicity in L929 cells, 241
in a desert spider, 97
in mutant and wild type CHO cells, 313
of hybrid bass, 271
of normal and malignant rat brain cells, 33
of three species of tropical oyster, 135
Heating,
rates in subspecies of *Neocicindela perhispida* and substratum colour, 55
Helix aspera, 185
Hemideina maori, 51
Herpes simplex virus, 11, 169
Heterometrus fulvipes, 141
Hibernation,
effect on blood chemistry in a snake, 107, 111
Homeoviscous adaptation,
in brain membranes from *Channa*, 209
Hot flashes, 43
Human, 43, 267, 333
Human embryonic lung cells,
and HSP production, 11
Humidity selection,
by thermoregulating grasshoppers, 353
Hyperthermia,
and recovery of damage in C3H 10T½ cells, 19
and survival of normal and malignant rat brain cells, 33
damage from in tsH1 mutant CHO cells, 313
in Cape gerbil at high ambient temperatures, 199
in rats during exercise, 155
Hypothalamic,
neurones, temperature sensitivity of, 367
Hypothermia,
in humming bird and sunbird, 71

Ice,
formation in *Hemideina* haemolymph, 51
formation in tissues and survival of two species of frog, 121
formation in tissues and water content during freezing and thawing in *Rana*, 263
Immobilisation stress,
effect on fatty acid profiles in BAT in rats, 251
Insect, 51, 55, 147, 323, 353
Insulation,
total body in neonatal foal, 1
Insulin like growth factor,
levels in pig tissues and acclimation and energy intake, 89
Iodoacetate,
effect on isolated heart from acclimated goldfish, 193
Infra-red radiation,
effect on body temperature and respiration in rabbits, 293
Isocitrate dehydrogenase activity,
from scorpion hepatopancreas dependency on acclimation, 141

L929 cells, 241
Lactate,
and alleviation of iodoacetate inhibition of goldfish heart, 193
Lethal temperature,
lower in *Hemideina*, 51

lower in three species of tropical oyster, 135
of hybrid bass, 271
upper in three species of tropical oyster, 135
Lipid,
composition modulation of brain membrane by acclimation in *Channa*, 209
Lower critical temperature,
in neonatal foal, 1

Machimus formosus, 323
Machimus occidentalis, 323
Mammal, 25, 43, 81, 83, 89, 125, 129, 155, 175, 199, 225, 235, 251, 257, 277, 293, 317, 347, 367
Man, 43, 267, 333
Melegris gallopavo, 287
Membrane,
lipid composition and fluidity in *Channa*, 209
Menopause, 43
Mesocricetus auratus, 129
Mesocricetus brandti, 175
Metabolic rate,
and seasonal acclimatization in migratory hamsters, 347
in a hummingbird and a sunbird, 71
in Cape gerbils and ambient temperature, 199
in neonatal foal, 1
in pouched mice, 25
of hepatopancreas of a scorpion, dependency on acclimation, 141
Metabolite(s),
tissue concentrations of in *Rana* during freezing, 263
Microhabitat,
and nest site selection by a desert spider, 97
Mitochondrial function,
adaptive changes in muscle in pigs during cold acclimation, 277
Model,
data dependent systems analysis of stochastic energetic responses to warm constant and cyclic air temperature in pigs, 225
for recording electromyography in terms of heat production in hens, 357
Mollusc, 135, 185
Morone chrysops, 271
Morone saxatils, 271
Muscle,
determination of function in after freezing of two species of frog, 121
oxidative metabolism of and cold acclimation in pigs, 277
measurement of shivering in hens, 357
Myotis daubentoni, 317

Naja haje haje, 107, 111
Neocicindela perhispida, 55
Nest temperatures,
role in nest site and web structure in a desert spider, 97

Obituary, 391, 393
Oogenesis,
effect of temperature on in *Helix*, 185
Operative body temperature,
determinations of in two species of *Machimis*, 323
Operative temperature,
standard, effects of morphology, microhabitat and environmental factors, 81
Oreochromis nilotica, 149
Organ temperatures,
during cold exposure in rats, 83
Oryctolagus cuniculus, 293
Oscillating temperatures,
effect on CTMax of hybrid bass, 271
Oxygen consumption,
in domestic fowl embryos and temperature, 339

Phosphorylase activity
from scorpion hepatopancreas dependency on acclimation, 141
Photoperiod,
effect on cold tolerance of *Drosophila*, 147
lack of effect on CTMax of hybrid bass, 271
role in seasonal acclimatization in migratory hamsters, 347
Pipistrellus pipistrellus, 317
Plecotus auritus, 317
Preferred temperature,
effect of season and diet on in tropical toads, 63
Protein aggregation and denaturation,
turbimetric assay for, 297

Rana pipiens, 121
Rana sylvatica, 121, 263
Rat, 83, 155, 235, 251, 257
Rat brain cells,
thermotolerance of, 33
Reflectivity,
cuticle and body temperature in *Neocicendela perhispida*, 55
Refugia,
use of by robber flies, 323
Reptile, 107, 111
Respiration,
effect of infra-red radiation on in rabbits, 293
Rhinolophus hipposideros, 317
Romalea microptera, 353

Saccostomus campestris, 25
Saccostrea cucullata, 135
Salivation,
and thermoregulation in Cape gerbil, 199
Schistocerca americana, 353
Selected temperature,
in marine toads, 63
in turkeys, 287
Shivering,
lack of evidence for in rats during cold exposure, 83
method of determining in hens, 357
Skin resistance,
and menopausal hot flashes, 43
Skin temperature,
and menopausal hot flashes, 43
Solar heat gain,
and behaviour in two species of robber fly (*Machimimus*), 323
Spermatogenesis,
effect of low temperatures or light on in Turkish hamster, 175
Starvation,
effect on CTMax of hybrid bass, 271
Stegodyphus lineatus, 97
Stress,
characterisation of from tympanic temperature of cattle, 115
Supercooling point,
in *Hemideina*, 51
Suis suis, 89, 125, 225, 277
Sweat gland,
recruitment versus output per gland during exercise in man, 267
Sweating,
effect on by anticholinesterase administration during exercise in man, 333
Symbiotic algae,
loss of by *Anemone* by hyperthermia, 217

Tatera afra, 199
Taxidermic mounts,
and standard operative temperature, 81
Temperature sensitive,
mutants, 305, 313
neurones in guinea pig hypothalamus, 367
Thermal conductance,
in Cape gerbil, 199
Thermal tolerance,
and HSP relocation during heating in CHO cells, 161
compared with TNF cytotoxicity in L929 cells, 241
in hybrid striped × white bass, 271
of normal and malignant rat brain cells, 33
treatment induced changes in, in CHO cells, 305, 313
Thermogenesis,
by rat organs during cold exposure, 83
Thermohaemolysis,
of human erythrocytes, 375, 381
Thermoneutral zone,
of a hummingbird and sunbird, 71
in Cape gerbil, 199
Thermoregulation,
and anticholinesterase administration in man, 333
and infra-red radiation in rabbits, 293
and total body insulation in neonatal foal, 1
behavioural in grasshoppers, 353
development of in turkeys, 287
in Cape gerbil, 199
in rats during exercise in the heat, 161
Thyroid hormones,
effect of rearing temperature on in rats, 257
Torpor,
daily in pouched mice, 25
in a hummingbird and a sunbird, 71
Transmittance,
of short wave radiation by bats wings, 317
Tumour necrosis factor (TNF-α),
cytotoxicity and heat shock response compared in L929 cells, 241
Turbimetric assay,
for heat induced protein aggregation and denaturation, 297
Tympanic temperature,
use in characterisation of stress responses in cattle, 115

Urination,
and thermoregulation in Cape gerbil, 199

Vasodilation,
peripheral and thermoregulation in Cape gerbil, 199
Ventilation frequency,
in a hummingbird and a sunbird, 71
Vitellogenesis,
low temperature sensitivity of in *Helix*, 185

Water content,
of *Rana* tissues during freezing and thawing, 263
Water loss,
and ambient temperature in the Cape gerbil, 199

AUTHOR INDEX

Adelman I. R., 271
Al-Badry K. S., 107, 111
Alemany M., 83
Aurelian L., 169
Azzam E. I., 19

Bakken G. S., 81
Barnard R. M., 43
Bedford J., 51
Benov L. C., 381
Bertin R., 257
Bosschaerts L., 125
Brown B. E., 217
Buono M. J., 267
Burton K. A., 89

Chang C.-F., 149
Chen G.-R., 149
Chen Y. R., 115
Cho J. M., 241
Closa D., 83
Connolly K. P., 267
Corry P. M., 241, 297, 305, 313
Costanzo J. P., 263

Das A. B., 209
Dauncey M. J., 89
Davenport J., 135
Davidson E. C., 263
Davies R. W., 141
De Marco F., 257
DeShazer J. A., 225
Ducayen M. B., 175
Durkot M. J., 155
Duxbury K. J., 199

Eigenberg R. A., 115
El-Deib S., 107, 111
Ellison G. T. H., 25

Fang J.-S., 175
Feddes J. J. R., 225
Francesconi R., 155

Geers R., 125
Ghosh D., 209
Giesel J. T., 147
Goedseels V., 125
Goggans M. L., 11, 169
Gomot L., 185
Gomot P., 185
Goossens K., 125
Gourine V. N., 367
Griffond B., 185
Griggio M. A., 235

Hadley N. F., 55
Hahn G. L., 115
Haim A., 347
Hamilton G. B., 353
Hays G. C., 317
Hembree W. C., 175
Henschel J. R., 97
Herpin P., 277
Heylen L., 125
Hou Z., 241
Hou Z.-Z., 305, 313
Hubbard R., 155
Hutchison V. H., 63

Ivanov I. T., 375, 381

Jagiello G. M., 175
Janssens S., 125
Jou T.-C., 33

Kalarani V., 141
Kasa I. W., 293
Kemp W. P., 323
Kim D., 297
Kolka M. A., 333
Kronenberg F., 43
Kuroshima A., 251

Lai Y.-K., 33
Lanciani C. A., 147
Layne J. R. Jr, 121, 263
Leader J., 51
Lee R. E. Jr, 263
Lee W.-C., 33
Lee Y. J., 161, 241, 297, 305, 313
Lefaucheur L., 277
Lipp K. E., 147
Liu H.-C., 33
Lubin Y., 97
Luz J., 235

Ma L., 89
Mackowiak P. A., 11, 169
Martinez J. J., 347
McArthur A. J., 1
Menaker M., 129
Miller D., 217
Modrey P., 287
Mohan P. M., 141
Morrison-Bogorad M. R., 11, 169
Mullens D. P., 63
Murgatroyd P. R., 1

Nganro N., 217
Nichelmann M., 287
Nienaber J. A., 115
Nozu T., 251

Nuzhy S., 107
Nuzhy S., 111

O'Neill K. M., 323
Ogawa K., 251
Ohinata H., 251
Ohno T., 251
Osada M., 193
Ousey J. C., 1

Pan D. H.-C., 33
Parduyns G., 125
Parkhurst A. M., 115
Perrin M. R., 199
Portet R., 257
Prange H. D., 353
Prinzinger R., 71

Raaphorst G. P., 19
Raese J. D., 11, 169
Rajurkar K. P., 225
Ramløv H., 51
Refinetti R., 129
Remesar X., 83
Rossdale P. D., 1
Roy R., 209

Saunders J. C., 89
Savill A., 55
Schäfer T., 71
Schuchmann K.-L., 71
Schultz T. D., 55
Sharp V. A., 217
Skinner J. D., 25
Speakman J. R., 317
Stephenson L. A., 333
Stewart J. H., 1
Sun L.-T., 149
Sung W. K., 175

Thwaites C. J., 293
Tøien O., 357
Tsukuda H., 193

Van Bael J., 125
Vasilenko V. Y., 367
Ville H., 125

Ward D., 97
Whittow G. C., 339
Wodtke E., 393
Woiwode J. G., 271
Wong T. M., 135

Xin H., 225

Zeisberger E., 391
Zhang Q., 339